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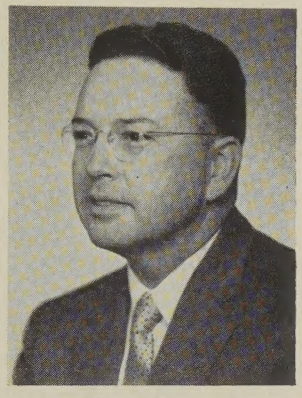
PRESIDENT'S MESSAGE

By ANDREW W. NEUREUTHER, *President*

The work of the world is far from done. Although nearly everyone is quite busy with the details of living from day to day, it seems that there is concern that there may not be enough for all men to do.



President Neureuther

Before the turn of the 20th century someone foolishly suggested that the U. S. Patent Office be closed because "everything that could be invented had been invented." Actually more things have been invented since that time than had been invented before the suggestion was made.

The laws of nature have always existed, if we define "always" as at least millions of years before the recorded history of man. Yet many applications of the natural laws have only recently been discovered during the last couple of generations. Have all the natural laws now been discovered? How many more discoveries and useful developments may there be during the next two generations?

The enlightenment which most of us receive comes from the discoveries and activities of a few brilliant minds. Publicity and teaching show the rest of us how it is done. The development of the A-bomb, the H-bomb, and the whole field of neucleonics was being carried forward by relatively few people during the early 1940's. The rest of us were blissfully unaware of these developments at that time. After World War II we were "let in on the secret," and were astounded at the progress of science.

How many classified developments are there today that the average engineer knows nothing about? How many similar things have not yet been discovered? How much will this International Geophysical Year reveal to man?

Realizing the implications of the foregoing, how insignificant and how inadequate it makes us feel! Each of us needs to have a sense of proportion, a sense of relative values. We need to know what is important and what is not important. We need to realize how much we do know, and to realize how little we know. We need to help each other know more, and as engineers are pledged to exchange information for the good of all mankind.

Let every man do all that he can to prepare himself to serve, and then serve the public diligently, competently, with good judgment, ethically and with full responsibility for all of his acts. We as engineers can only deserve recognition. We cannot demand it. We must earn the status and recognition which we seek through individual good deeds and accomplishments.

SUMMER ISSUE

Following the format established in June, 1946, the June, July, August and September issues of the ILLINOIS ENGINEER *are "self-covered" issues.*

Structural examination questions appear in this issue and will be continued in other issues as space allows.

On page 10 you will find an insert to the Recommended Fee Booklet, which was prepared by the 1956-57 Fees and Salaries Committee. It is suggested that you clip this information and insert it in your copy of the Fees Booklet.

P. E. ROBERTS, *Editor.*

I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto.

Sir Francis Bacon

DID YOU FORGET?

Did you forget? Dues are due on January 1 each year. The price you pay for helping to support the Illinois Society and National Society is not large. However, your support is necessary. If you forgot to send in your check for 1957 dues, your name will of necessity be removed from the *Illinois Engineer* mailing list. Please send your check to the Executive Secretary's office today.

SUBSCRIPTION RATES

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VOX SECRETARII

By P. E. Roberts, *Executive Secretary*

Legislative

The Society's Legislative Committee program is well on the way toward one of the most successful years since the passage of the Professional Engineering Act in 1945. The Architects Bill, S.B. 396, passed the Senate amended (as suggested by the IEC and ISPE Legislative Committees) and has been reported out of the House License and Miscellany Committee on May 28th "Do Pass," by a vote of 29 to 0 with one voting present. The Illinois Society of Architects again attempted to introduce an amendment outlawing corporate practice, but were unsuccessful. They might try it once more on second reading and if they do, it will probably be the death of this Bill, since it will have to return to the Senate to have the House amendment approved there. County Highway Engineers Bills, H.B. 352 and 353, are on third reading in the House; the set of Surveyors Bills, H.B. 913-921 were amended on May 15th and reported out of committee "Do Pass"; the Bills requiring City Engineers to be registered, S.B. 634, 635 are in the Senate Committee on Municipalities; the Highway Engineers salary and classification Bill, H.B. 673, is in committee on Personnel and Pensions. There was some unrest about the Bill which would tax occupations, including engineering, 1% of their gross business. It has been residing in the Senate Committee on Revenue since January 28 and it is a good bet that it will not move from there.

It will be remembered that two years ago the Society cooperated with a committee of the Bar Association in the successful passage of a series of Bills which recodified drainage laws. As society continues to grow more complex, the cooperative effort of all professional people is more necessary than ever before. During the present legislative activity the architects found that the going was rough without the assistance of the Illinois Society of Professional Engineers.

Board of Direction

The June Board of Direction meeting is scheduled for the 15th in Decatur, the same day that this issue goes to the mail. The September Board date has already been fixed and will be similar to that of last year, a workshop-type conference with several committees, the Board, and several functional section groups meeting at Allerton Park on September 13 and 14. The first meeting of its kind, which was held last year, was so successful that there was no doubt about its being repeated this year.

Structural Examination Questions Book

The material for the Structural Examination Questions Book is in work at present and the completed book should be ready for distribution somewhere around the middle of August. Questions printed in the 1947 and 1948 issues of the *Illinois Engineer* will be supplemented by questions taken from structural examinations given during the past five years.

Items of Personal Interest

The short news paragraphs printed under the heading "Items of Personal Interest" can be continued only if you, the readers, supply the Editor with items. For example, we found out about Homer and Mrs. Chastain attending the Rotary International Convention in Switzerland after they returned to Decatur. This would have been an excellent news item. The Editor solicits your help.

Membership

With over 100 delinquents being dropped on July 1 for non-payment of dues, it will be necessary to have many applications for membership in the Society before the hard-to-reach plateau of 2,000 members is achieved. You are reminded that those elected between July 1 and November 1 pay only for the last half of the year's dues. There is no better time than now to sign up that new member.

Miscellany

Secretary Emeritus Babbitt returned from Brazil after a two-year sojourn on May 31. After numerous stops on a transcontinental auto tour, he will take up his new duties in Seattle on the Puget Sound Drainage and Sewerage project on July 1. . . . Ben Muirheid is having his troubles getting himself and his family adjusted to life in India. Two letters have been received from him which are given in part on other pages of this issue.

DID YOU FORGET?—SEE PAGE 1

"I'm sorry to phone you at the office," said the wife, "but you have a special delivery letter, which just arrived, marked 'Private and Personal'."

"Okay," replied her husband, "what does it say?"—*Great Northern Goat.*

A physics prof called on one of his students to list some characteristics of heat and cold.

"Things expand in heat and contract in cold," answered the student.

"Give an example."

"In summer," answered the student, "the days are long and in winter the days are short."—*Successful Farming.*

Typical Structural Examination Questions

A1. Give the approximate weights per cu. ft. for the following:
(a) Steel (ASTM A7)
(b) Cast Iron, pig
(c) Concrete masonry
(d) Dry packed sand
(e) Damp plastic clay

A2. Give approximate values for the following:
(a) Elastic limit in kips per sq. in. for tension in structural steel (ASTM A7).
(b) Allowable bending stress for select Douglas fir, close grain.
(c) Allowable compression bending stress in concrete for a reinforced concrete beam based on a 7-day cylinder strength of 2700 psi. (Type 1 cement.)

A3. A locomotive tire is to be heated and shrunk on a wheel 64" in diameter for a tight fit. At normal temperature, the inside diameter of the tire is .07" less than the diameter of the wheel, before shrinking on the tire. Assuming normal temperature of 70° F., calculate the temperature to which the tire should be heated, so that the inside diameter of the tire will be exactly the same as the outside diameter of the wheel, before fitting the tire to the wheel.

A4. Referring to Fig. A4, calculate deflection at point A.

A5. What is the significance of the following in the use of ordinary carbon steel as a structural material.
(a) Elastic limit
(b) Per cent reduction of area
(c) Ultimate strength
(d) Coefficient of expansion
(e) Carbon content

A6. (a) Calculate the moment of inertia about the horizontal axis through the centroid of the section shown in Figure A6.
(b) Assuming the section is that of a beam, what moment will it carry in inch pounds if the stress in the bottom flange is limited to 8,000 p.s.i.?

A7. Fig. A7 represents a flume, carrying under normal conditions, a depth of 6 ft. water. If the flume is founded on gravel what factors would influence your design with respect to the thickness of the bottom of the flume, bearing in mind that the flume may be dry for a number of days on occasion.

A8. The two beams in Figure A8 are fixed at the supports and are connected for shear only at the point of 4 Kips load.
(a) What proportion of the load is carried by each beam? What proportion would be carried if the longer beam had a moment of inertia twice that of the shorter beam?

A10. How would you find the stress in member L_2V_3 of the truss shown in Fig. A10.

A11. A 10" x 12" wood beam spanning 15' 0" has been strengthened by the addition of two 10" x ⅜" side plates. The extreme fibre stress in bending in the wood beam is 1400 psi. What is the corresponding stress in the steel plates? Fig. A11.

A12. The tank shown in Fig. A12 is filled with water and rests on a concrete slab base.
(a) How many gallons will it hold?
(b) What is the vertical component of the total pressure exerted against the sloping side of the tank?
(c) What is the horizontal component of the total pressure exerted against the sloping side of the tank?
(d) What is the pressure per square foot exerted on the bottom of the tank?

A14. Determine the following properties of the beam cross section about the horizontal axis in Fig. A14.
(a) Moment of inertia
(b) Section modulus
(c) Radius of gyration

A15. A load W is carried at the intersection of two I beams at right angles to each other, which intersect at the centers of their spans. One I is an 18"-55# with I = 796 on a 22 ft. span and the other I is a 12"-40# with I = 269 on a 14 ft. span. What portion of W is carried by each beam? Neglect weight of beams.

A16. A suspension bridge cable has a sag of 60 ft. on a span of 240 ft. c/c towers. The load is 1000 lbs. per foot of span. What is stress in cable? Neglect cable weight.

A17. A solid when weighed in air weighs 675# and when immersed in water weighed 581.4#. What is specific gravity of the solid? What is a common material of that weight?

A18. As used in lumber specifications, define and illustrate:
(a) Side grain and cross grain. Show correct grain for a beam.
(b) F.O.H.C.
(c) Density

A19. (a) What is maximum allowable percent of carbon in steel to be used without annealing or preheating for welded construction?
(b) What is the approximate Brinell hardness for A.S.T.M. A7 steel? Can this steel be flame hardened? If so, to what Brinell?

A20. Fig. A20 shows a cross section of a vessel. Calculate cross sectional area.

A21. It is desired to lift a trolley from an overhead traveling crane and lower it to the floor by using a block and tackle arrangement suspended from the roof, as shown in Fig. A21. Which of the three sheave arrangements could be used? Explain why.

A22. What is the relative deflection of beams A and B shown in Fig. A22? Both beams have identical properties.
What relative value I should each beam have in order that the deflection of each will be the same?

A23. Draw the shear and moment diagrams for the frame shown in Fig. A23. I constant for all members. Calculate the deflection of A in terms of EI.

A24. Name four different types of bearing piles and describe briefly the use for which each one is particularly adapted.

A25. Define the following engineering terms:
(1) Modulus of elasticity
(2) Elastic limit
(3) Yield point
(4) Ultimate strength
(5) Reduction of area
(6) Torsion
(7) Bending
(8) Shear
(9) Diagonal tension
(10) Fatigue

A26. Define the following:
(1) Composite piles
(2) Foundation caissons
(3) Raft foundations
(4) Unconfined compressive strength
(5) Standard penetration test
(6) Azimuth
(7) Stadia readings
(8) Plane table survey
(9) Prestressed concrete
(10) Precast concrete

A27. Two beams are to be loaded by a concentrated center loading to deflect uniformly on a span of 20 ft. Assuming a maximum flexural stress of 20,000 psi, and that they are laterally supported: (See Fig. A27)
(a) Determine the dimensions of X and y.
(b) What is the deflection at the center of span?

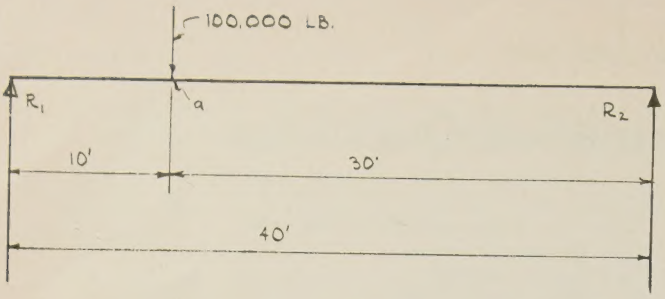

Fig. A-4

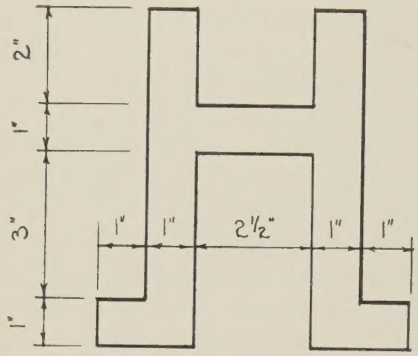

Fig. A-6

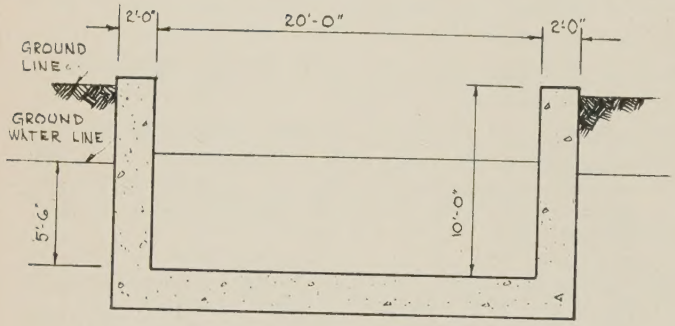

Fig. A-7

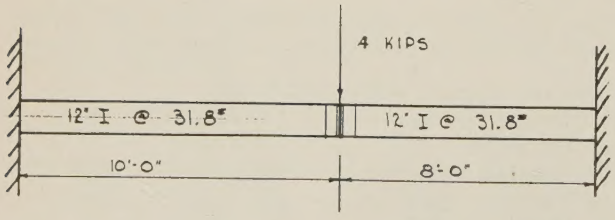

Fig. A-8

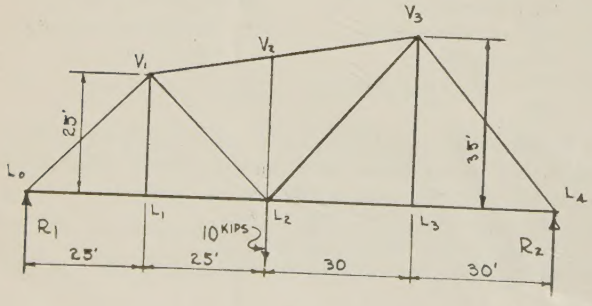

Fig. A-10

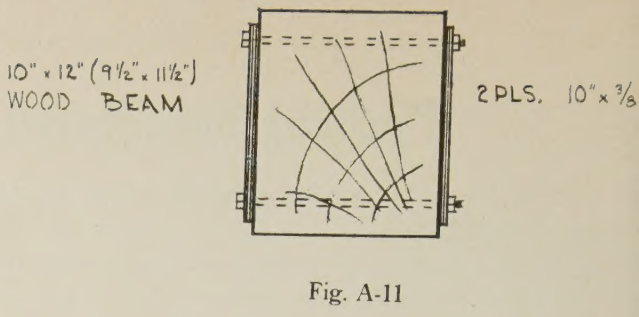

Fig. A-11

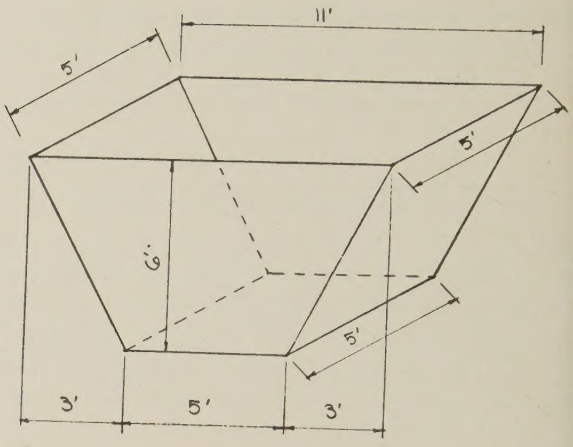

Fig. A-12

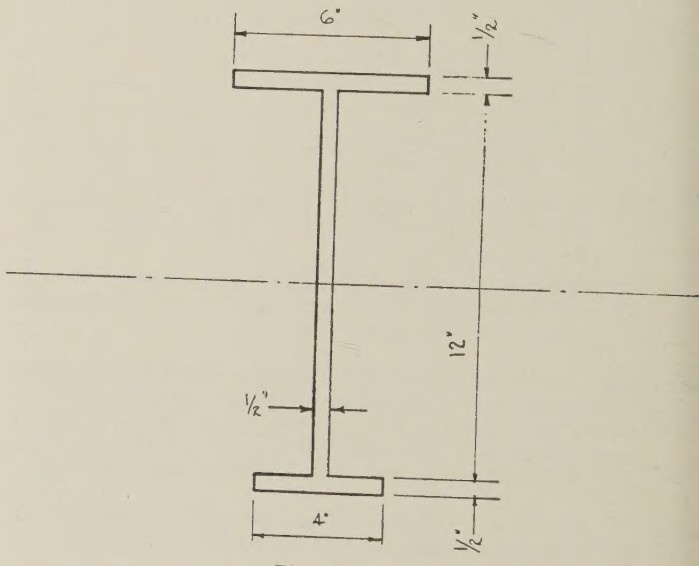

Fig. A-14

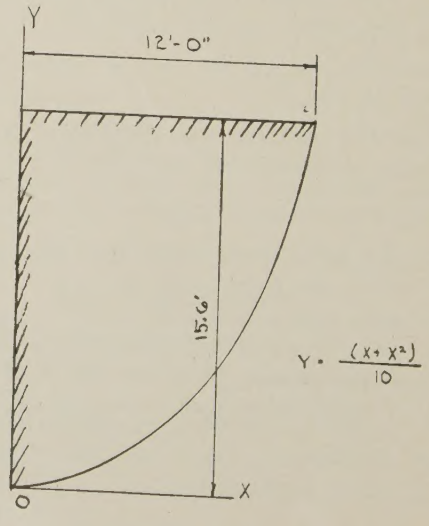

Fig. A-20

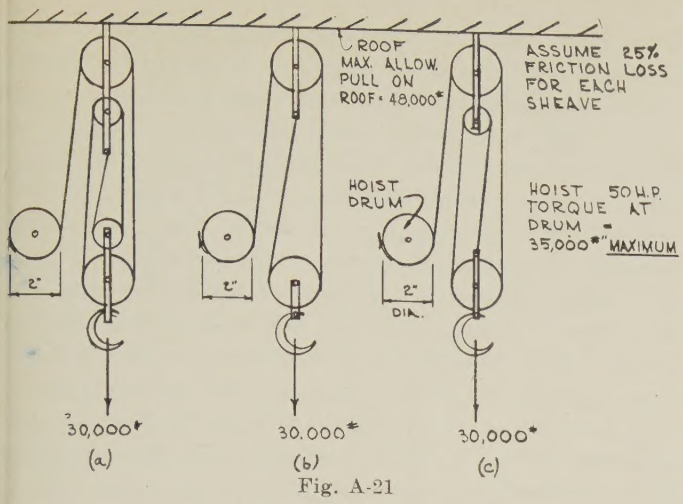

Fig. A-21

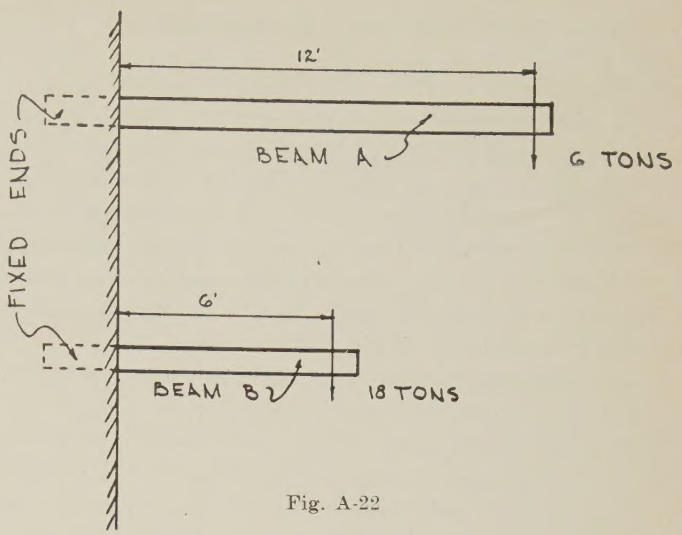

Fig. A-22

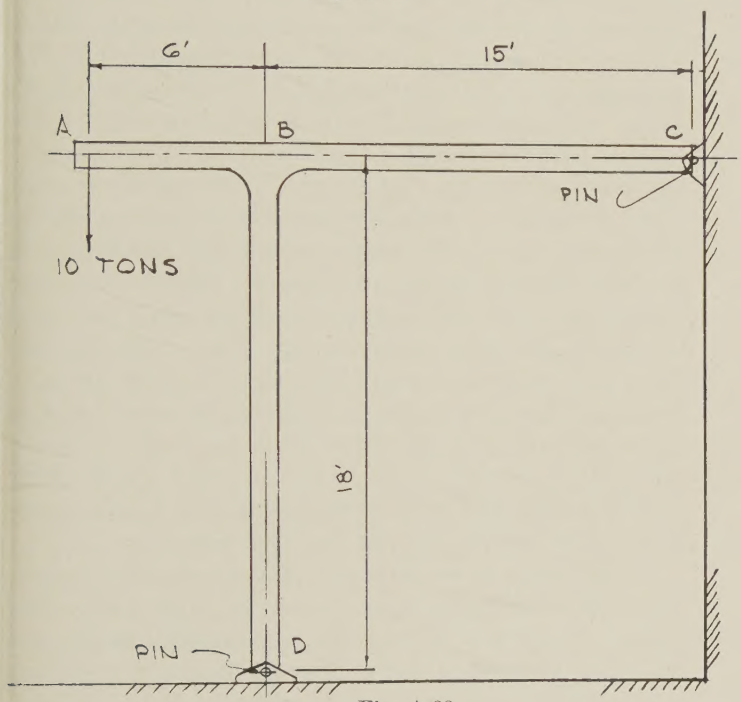

Fig. A-23

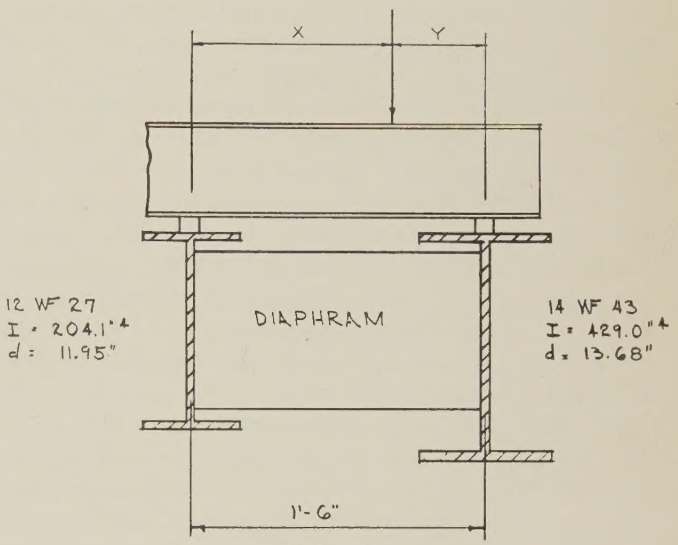

Fig. A-27

NEWS FROM THE CHAPTERS

CHICAGO CHAPTER'S May meeting was held in the Chicago Engineers Club on May 9. Quoting from the minutes, "President Duba made a brief report of the ISPE convention in Chicago. The meeting was successful and many favorable comments were received on the directory. Financially the meeting appeared to about 'break even.' He reported that complete results will be reported at the next meeting by Mr. Jacobs, who would not be present at the meeting."

Frank Edwards, newly elected Society Vice President, announced that he would not be able to continue to serve as Chicago Chapter representative. It was moved and seconded that the President appoint a representative to fill the unexpired term.

Mr. Edwards also informed the chapter on the Central Illinois Chapter dues change resolution. It was regularly moved and seconded that the chapter support the resolution. The motion was carried by a voice vote.

Mr. Linas Brown reported on the Chapter's unsuccessful request to change the Chapter's election period to coincide with NSPE. "The membership present agreed that our original request was valid and that the committee should resubmit it to the State Board of Direction for further review."

Twenty-six members and guests were present.

CHAMPAIGN COUNTY CHAPTER held its Annual Ladies' Night meeting at Robert Allerton Park on May 23. Chapter Past President certificates were presented to C. Dale Greffe and Mack Kinch.

The Chapter heard a very informative and highly amusing address by Professor Harry J. Fuller, who spoke on the deficiencies of basic education, which are prevalent today in our high schools. Among the interesting statistics in Professor Fuller's talk was that the failure on the entrance examination for Rhetoric increased from 20% in 1950 to 46% in 1956 at the University of Illinois. Sixty-two members and guests enjoyed the usual fine dinner which is served at Allerton.

BEN MUIRHEID WRITES

From New Delhi—April 23, 1957:

We got our first reimbursement for travel expenses —for the period Feb. 17-March 25. A genuine U. S. Government check for $790.43. Sounds like a lot when you read it, doesn't it? But it only reimburses us for part of our expenses of getting to D. C., living and eating while there—fun, but expensive—living here, etc. Sometimes we wonder if we will be able to get back down to a reasonable scale of living, costwise, when we get back home. (The answer is . . . we will have to . . . no other choice.) But we have gotten exposed to some rather high levels of spending money. You really have little choice unless you go native—which is not our nature.

Several have asked about prices. That is always of interest. It depends on what you buy and to some extent on where you buy it. Strictly luxury items like cameras and film are more expensive than in the U. S. Film is about 25% higher than at home. Hotel prices are higher than at home . . . until you consider that meals are included. We are paying $16 a day, here. But in Washington, D. C., we paid $12 and our meals were extra. Local food is cheap but you only get it in season. Oranges are presentely costing 4 rupees a dozen—80¢. Hail hurt the crop around Nagpur last month. At the peak of the season vegetables are very cheap, the same as at home. But if you use much American style food, you have to buy it in tins . . . cans to you. Strained baby food is 15¢ a can. Junior baby food is 22¢ a can. Baby food meats are 34¢ a can. A 12-oz. box of corn flakes is 32¢. Ritz crackers are 47¢ a pound. A 3-lb. can of Cricso is $1.47. Jell-o is 13¢ a box. Flour is 81¢ for a 5-lb. package. Aunt Jemima pancake mix is 49¢ for a 2-lb. box. Chocolate syrup is 30¢ per 1-lb. can. Toilet tissue is 18¢ per roll. A 16-oz. can of pork and beans is 18¢. A #303 can of peas is 48¢. Salad dressing is 95¢ a quart. Lux soap is 18¢ a bar. Cream of chicken soup, 24¢; Saran Wrap, 45¢; breakfast cocoa, 83¢ a lb.; canned hams, $1.56 a lb.; salmon, $1.05 a lb.; 46-oz. cans of juices are from 41¢ to 49¢, depending on kind. Chase and Sanborn instant coffee is $2.52 for a 6-oz. jar. Pream is 41¢ for a 4-oz. can. Jams are 40¢ per 12-oz. jar. These prices are all from the Commissary. On the open market prices are much higher. The commissary also dispenses the stronger liquids and spirits—at fantastic prices: bourbon for $1.28, gin for 70¢, rum for 87¢, vodka for $1.40, Canadian Club for $1.55, scotch for $2.77 . . . Ballantine 32-oz. We haven't purchased any of it, but it is a popular part of the store. Cigarettes are $1.35 a carton. White Owl cigars are $6.50 for a box of 50. For comparison, toilet paper is 3 rupees a roll on the open market . . . 60¢. Makes one appreciate the U. S. economy.

Travel in this country requires careful planning. You anticipate your needs and take it with you or you are out of luck. You carry a bedroll complete with mattress (thin one), pillow, sheets, and mosquito net. You take two quinine tablets per week to maintain good resistance to malaria. The Embassy health unit gave us a full bottle of 100 pills since ours is a big family. Chloroquine phosphate—without sugar coating—the straight stuff. Gosh, is it ever bitter. You carry a canteen of boiled water or else you carry a small bottle of globaline tablets—iodine—made by Wallace and Tiernan of Baltimore. One tablet per quart of water. Makes the water taste pretty awful, but after you get real thirsty, it goes down okay. Ice water is strictly an American habit, you find. You can retain the habit, but never get a chance to use it. Ice is available, but it is like the ice back home—made from enriched water—usually has odd bits of vegetable matter in it. You soon learn to ask for *garam pani* (guhrum pahnee) which is Hindi (also Murathi) for boiled water. You are tempted to ask for *tenda pani*—cold water—but there is the likelihood that your request will be construed to mean cool water straight from the well. Request *garam pani* and hope it will be only lukewarm. One never need be afraid of asking for tea because it is the custom to serve it scorching hot. The cup has never known the feel of soap or detergent or antiseptic solution . . . but after each use it gets vigorously massaged in good pure water—pure water is water with no visible animal or vegetable matter. (In any hotel the waiter carries a small towel for wiping out your plate before he sets it in front of you. You might say the towel has "tattle-tale gray," but that is not quite right because such a term means you failed to use a good bleach after the wash in suds. They don't use soap for washing clothes—simply soak them in water, beat them against a rock, soak some more, beat the rock some more, then stretch out in the sun for bleaching.)

No television in this country. Radios are not common. The only broadcasts in India are by AIR—All India Radio—owned and run by the government. Radio sets are being given to villages. Eventually the government expects to give 600,000 sets to villages—1 to a village. 95,000 will be distributed this year. The Voice of America can be picked up from a transmitter on Ceylon. Short wave from the U. S. is usually erratic and mushy. But they say it comes in fair around 2 a.m. Hard on sleep. Reminds me of our efforts to get U. S. broadcasts on our ship in the Pacific—gives you something to do but not always useful. They have golf courses, if you are a pursuer of the little white ball. And they have movies. Delhi usually has a couple of American pictures playing. Kotah has one English picture a week . . . on Sunday night.

From Kotah—May 11, 1957:

When we finally got ready to leave Delhi, we had to repack our stuff which came by air freight—all 597 pounds of it. The cardboard cartons were battered and broken. Material must be strongly boxed for railway travel to prevent damage in transit and avoid pilferage —a polite term for theft. The Embassy provided a 1½-ton truck to haul our gear from the hotel to the Delhi station. Also provided an Indian man to help with the

language barrier. (There is a popular story making the rounds that English is spoken everywhere in India—but don't let that mislead you into thinking there are no language difficulties. You bump into trouble every turn.) We had 16 trunks and boxes besides our suitcases and hand luggage! Paid 82 rupees extra weight charge. We were allowed 1½ maunds (120 pounds) each. That is 600 pounds on our 5 tickets. In addition, we were charged for 16 maunds, 10 seers. (Maund is 80 lbs. A seer is 2 lbs.) That is 1300 lbs. So it seems the Muirheids have roughly 1 ton of worldly goods.

The train was the "Frontier Mail," a regular daily train running between Bombay and Delhi. We rode in the air-conditioned coach which costs 6 times the fare in regular first-class coaches. Our tickets were furnished by the Embassy because the family was just completing their international travel from Urbana to Kotah. We shared our compartment with an Austrian, "Commercial Counsellor" attached to the Austrian Embassy. I remarked that there had been considerable news about Austria of late. He replied very smoothly that "There has always been a lot of news about his country." B-r-r-r. So I changed the subject. He was a nice guy. Spent most of the time trying to learn to play cards with the children. Kids are great ambassadors! When we left the train he thanked us for our sociability and said we were the first American family he had been with—he was quite pleased that he could follow our talk without difficulty. He was going to Bombay from Delhi.

Two Jeeps awaited us at Kotah. I had telegraphed on Monday that we were arriving on Wednesday. The soil conservation officer, Dr. N. Patnaik, Ph.D. from Missouri, got the telegram one hour ahead of train time. He came in his brand new Jeep station wagon. The Jeep assigned to us had previously been used by an American who had just vacated this house. He left the vehicle (*wahn* in Indian) in care of the executive engineer in charge of the large irrigation dam being built here in Kotah . . . Mr. Chowdhary. Chowdhary had "his man" meet us. Dr. Patnaik sent back to his office for their 1½-ton pickup. After our gear had been dumped—yes, dumped—literally—from the train (the train was delayed 15 minutes while the unusually large assortment of trunks was pushed off on the dock), three trips were needed to get our belongings to Jai Vati House. The two vehicles from the soil conservation center left. I tried to explain to Mr. Chowdhary's man that the remaining Jeep was mine and could I take him home. He said, "Yes, please" and started the motor. Off we went through tortuous winding narrow streets and ended up at a huge rambling complicated structure which must have been some sort of palace at one time. He got the idea across that it was Chowdhary's office. But no Chowdhary. After 15 minutes of sitting, I finally dug up a little guy who could speak twice as much English as the Jeep driver. Chowdhary was not there—which I had finally figured out. He was not expected to return! Another session of Hindi-English with the driver. I got the idea that he was not about to turn the Jeep over to a total stranger. We finally set off again. Ended up at another palace sort of place. "Chowdhary's bungalow." Your residence is always your bungalow—no connection with size or appearance. Here a man spoke fair English. But his comprehension was not much better. I finally insisted that I was taking the Jeep with me. Okay. The driver hopped in and we returned to Jai Vati House. I gave him a typed release for the Jeep—an official TCM letterhead. And the Jeep was mine—finally. Elapsed time . . . 1½ hours! It was then 7 p.m.

TCM said they had shipped me two air conditioners from Bombay, but they were not here. After much writing and inquiring, I learn they were shipped from Bombay to "B. E. Muirreid," Kotah Junction, Madhya Pradesh. Hmmm. Apparently the American Embassy is too busy to check their addresses. So somewhere in the state of Madya Pradesh are two air conditioners. With the temperature up near 110 each day, we could sure use them—if we had them. In the meantime, we are sweating it out—and that ain't no wise-crack, either. We are not going to die, but a billing clerk in the Embassy at Delhi—working in all of their air-conditioned splendor—would be near death if we could get our hands on him.

My first job was to officially report to TCM at Delhi. It was a real pleasure to take typewriter in hand and "Just give us the facts, ma'am." I commented on the 1951 vintage Jeep and its long and faithful service. That I was terribly impressed by the dandy winch on the front, etc. But six years was ample service and I needed dependable transportation. I reported on the condition of the stoves and refrigerator, etc., etc. I tried to be friendly about it because it was sort of amusing to find everything is so consistently in bad shape. Also, the man at Delhi who handles such stuff is a nice guy and we are friendly—or were when I left Delhi. I told them we were setting forth for Delhi on Sunday, May 12 and I would like to get a better Jeep when I arrived. A letter came back by "Express Delivery" (Special Delivery to you) from Jim McCoy saying a new stove and a new electric refrigerator were being sent by truck from Delhi. Also, another Jeep would be waiting for exchange when I got to Delhi. Further, they were trying to run down the mis-sent air conditioners.

I have long and carefully studied the road map from Kotah to Delhi. I have all important points written down in both English and Hindi—I can begin to read the stuff a little. We will leave here at 3:00 a.m. Sunday. 339 miles. Take 12 hours. We will load the Jeep with water—4 thermos jugs—and grub. We will make it. The Jeep motor is okay. We may have to stop every 100 miles and fight the language barrier of lube oil. But you know, this is all sort of fun. And even though it doesn't sound like it, I manage to get in a little official soil conservation work. That is another story which I will tell you about sometime. The erosion problems that I have been asked to advise on have been mighty rough. Their

idea is to tackle gullied cut-up abandoned land, wave a magic wand, and convert it to Class I land. And it must be done with no mechanical equipment and at small cost! If I can do that, I will be a genius. In the meantime, as Senator Claghorn says, "I'm thinking it over, son."

BEN MUIRHEID
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San Francisco, California

From Engineering and Scientific Manpower Newsletter

THE TIDE TURNS

Office of Education figures on degrees earned in institutions of higher learning in academic year 1955-56 are now at hand. For the first time since 1950 they show marked increases in nearly every field of science and engineering at the Bachelor's level, but only minor changes in the number of recipients of higher degrees. In its survey the Office of Education made several changes in its classification of subjects, but only in the field of agriculture were these changes of a major character. Forestry, for example, was given a separate listing; and agricultural education was transferred from the heading "Agriculture" to the heading "Education." In an effort to make the figures published in the NEWSLETTER strictly comparable, these two fields have been added to the totals for agriculture, and in the following table the years 1954-55 and 1955-56 utilize the same base that the NEWSLETTER has employed in presenting the statistics in the past (NL #86, Dec. 9, 1955):

Earned Degrees, 1954-55 and 1955-56

	Bachelor		*Master*		*Doctor*	
	1954-55	*1955-56*	*1954-55*	*1955-56*	*1954-55*	*1955-56*
All Fields	*287,401*	*311,298*	*58,204*	*59,370*	*8,840*	*8,815*
Agricultural	7,170	7,286	1,364	1,467	507	398
Biology	9,050	12,566	1,609	1,759	994	1,022
Mathematics	4,034	4,660	761	892	250	224
Physical Sciences	10,516	11,672	2,544	2,640	1,713	1,635
Psychology	5,532	5,665	1,293	969	688	632
(Subtotals)	36,302	41,849	7,571	7,727	4,152	3,911
Engineering	22,589	26,312	4,484	4,724	599	610
Totals	58,891	66,016	12,055	12,451	4,751	4,521

The increase at the Bachelor's level amounts to 12%, and half of it was in the field of biology which, until this year, has suffered a slow but steady decline. In the preceding academic year, scientists and engineers earned approximately 20% of all the Bachelor's degrees awarded, but in 1955-56 the percentage rose to slightly more than 21. No explanation is available for the sharp drop in the number of doctorates awarded in agriculture and psychology, but the general decline at this level reflects the heavy draft calls made upon graduate students in 1953 and 1954.

NEW MEMBERS

National

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McCoy, James D., R. R. 2, Dixon. (Rock River Chapter)
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Affiliate

Mohler, Louis C., 1704 Rodgers, Alton. (St. Clair Chapter)

DID YOU FORGET?—SEE PAGE 1

The teacher was trying to instill the traffic rules into her young charges. "What is a traffic light?" she asked.

"It's a trick," Jimmy answered, "to get people halfway across the street safely."—*Dixie Roto Mag.*

PROFESSIONAL DIRECTORY

RECOMMENDED PROCEDURE FOR DETERMINING PERCENTAGE FEES FOR WORK WHICH FALLS UNDER BOTH SCHEDULES A AND B

Where the type of work on a single project falls within both categories for fee schedules A and B, it is recommended that the fee be based on a composite for the two schedules. In computing this composite percentage of construction cost fee, it is recommended that the fee be figured first on the larger portion of the construction cost, using either Schedule A or Schedule B whichever portion has the greater estimated cost of construction. In computing the remainder of the fee, it is recommended that it be based on the other schedule, figuring the appropriate fee on construction cost increments continued from the last increment employed under the first schedule employed.

Example:

A consultant offers to perform engineering services on a $500,000 project consisting of a $300,000 sewage treatment plant and $200,000 of intercepting sewers. The estimated fee would be:

Under Schedule A		Under Schedule B	
$ 50,000 × 12%	$ 6,000	(from $300,000 on)	
$100,000 × 9%	9,000	Next $200,000 × 5.5%	= $11,000
$150,000 × 7.5%	11,250		
Total A	$26,250		
Total B	11,000		
Total Project Fee	$37,250		

Percentage Fee for Total Project: $\frac{37,250}{500,000} = 7.45\%$